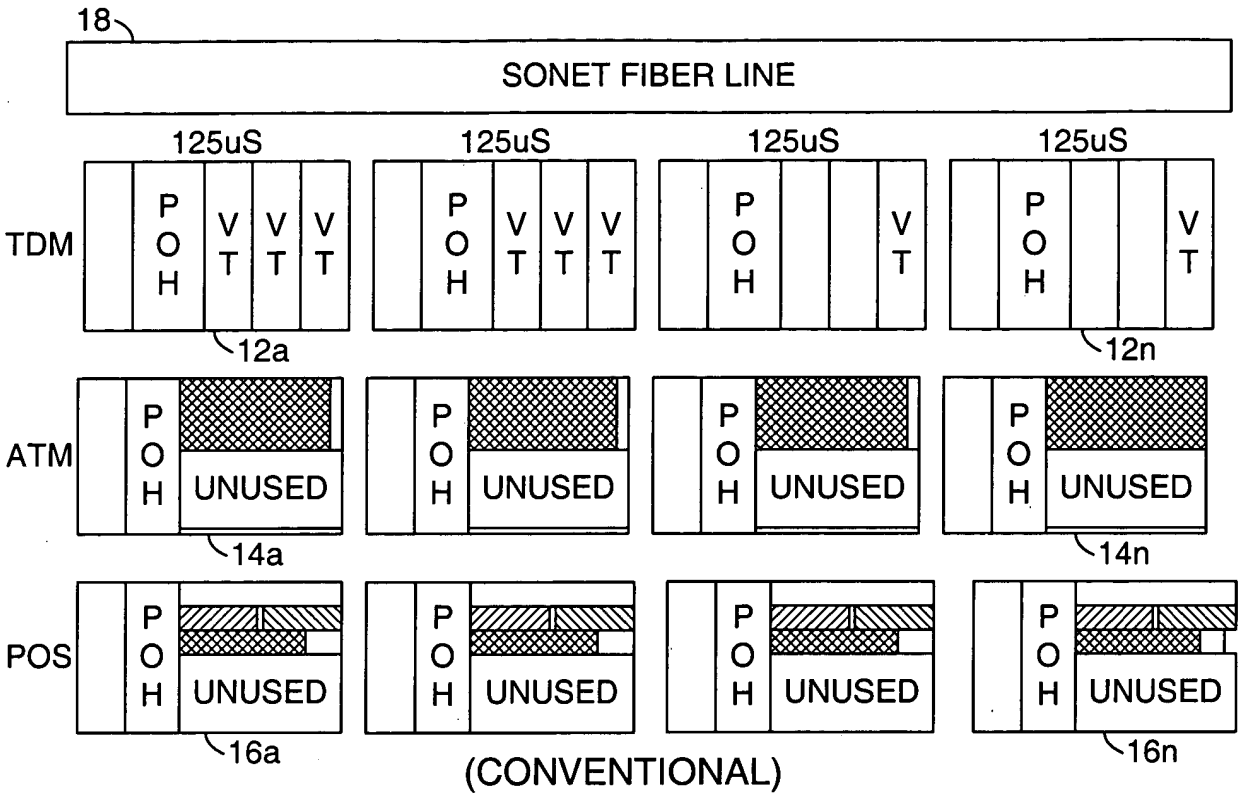
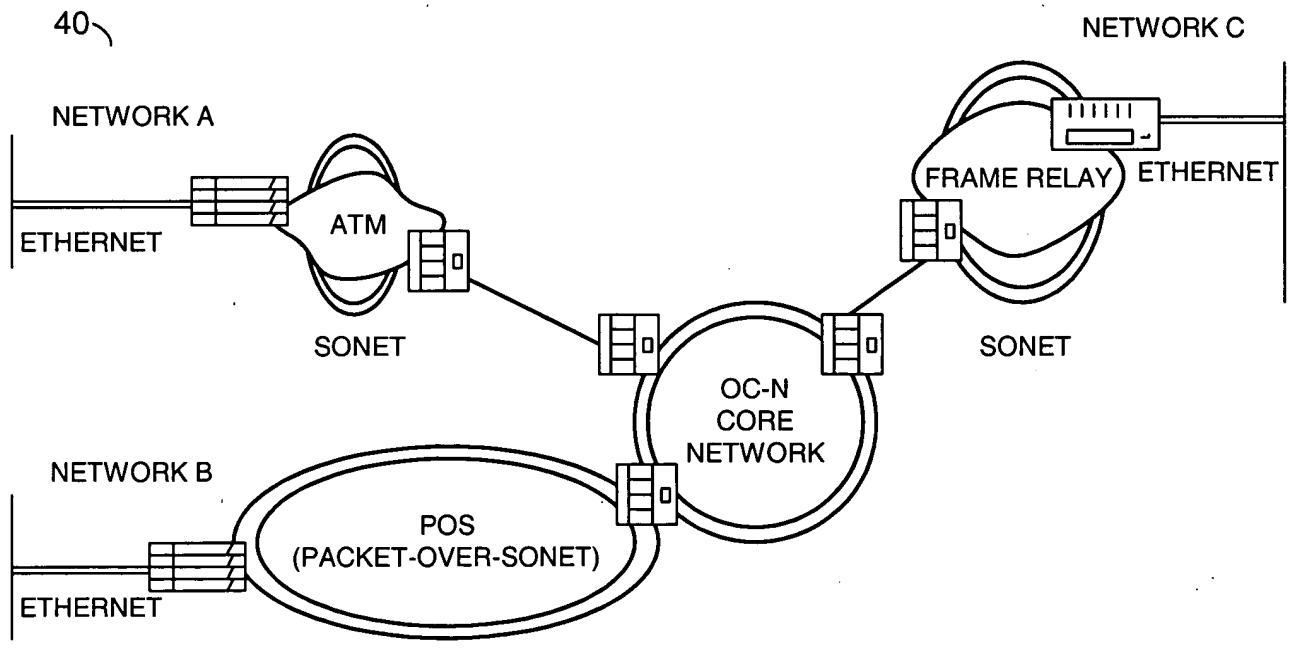
OIPE JC37
NOV 01 2004
PATENT & TRADEMARK OFFICE



(CONVENTIONAL)

FIG. 1



(CONVENTIONAL)

FIG. 2

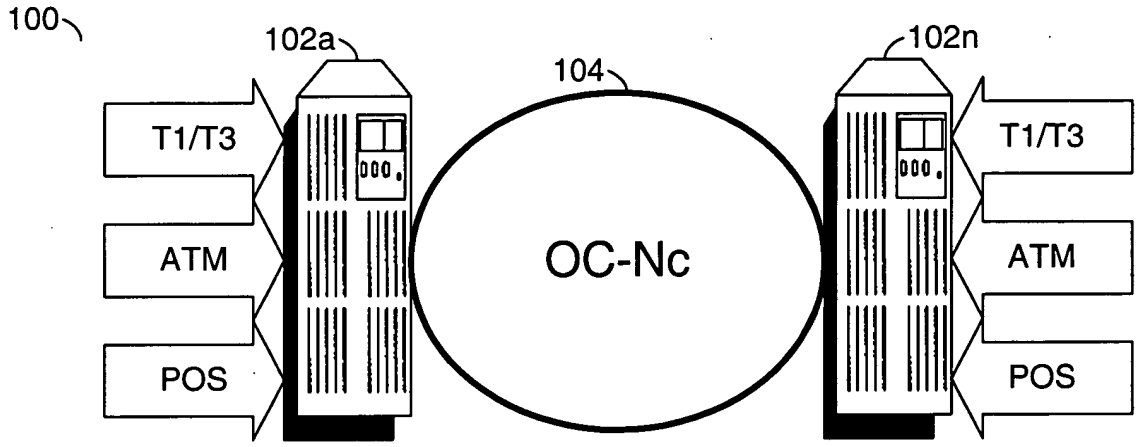

100
102a
104
102n
T1/T3
ATM
POS
OC-Nc
T1/T3
ATM
POS

FIG. 3

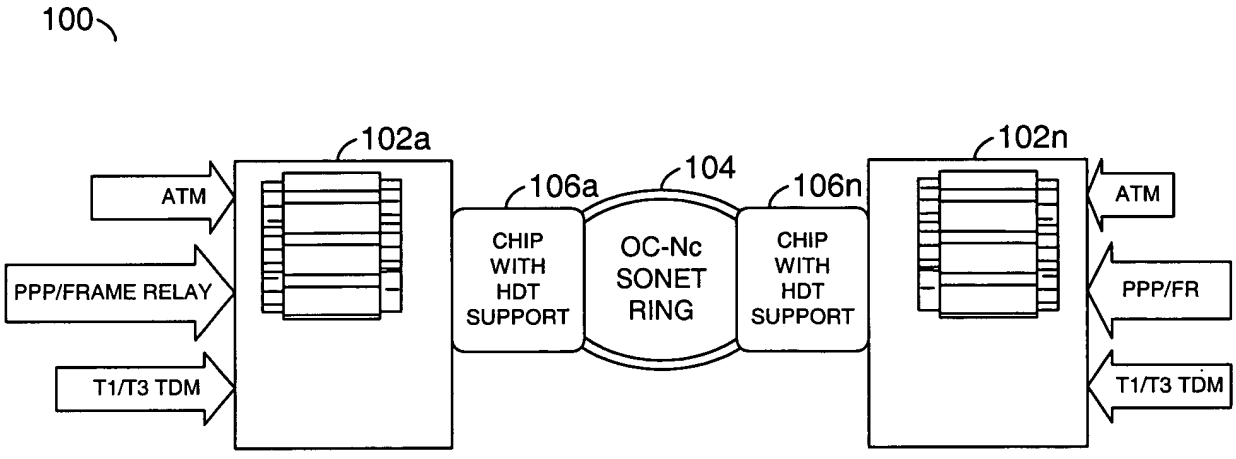

100
102a
106a
104
106n
102n
ATM
PPP/FRAME RELAY
T1/T3 TDM
CHIP WITH HDT SUPPORT
OC-Nc SONET RING
CHIP WITH HDT SUPPORT
ATM
PPP/FR
T1/T3 TDM

FIG. 4

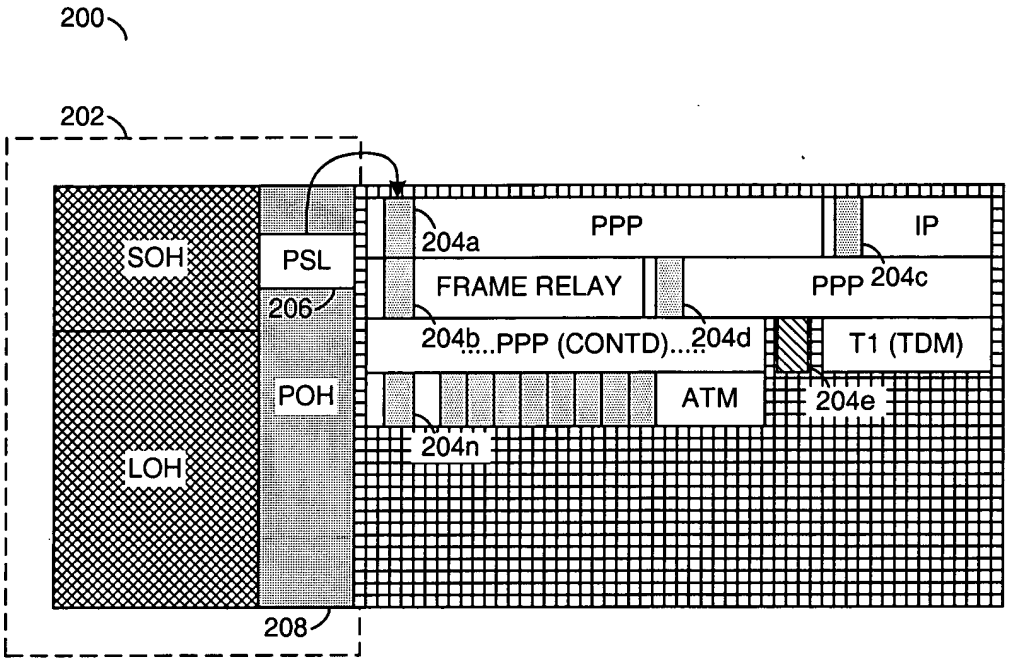


FIG. 5

150

152 PACKET IDENTIFICATION	154 MPLS LABELS	156 LAYER 2 ADDRESSES		158 DATA IDENTIFIER	160 LAYER 3 ADDRESSES	162 USER DATA	164 ERROR DETECTION
IDENTIFY THE KIND OF PACKET BEING CARRIED (ETHERNET, PPP, FRAME RELAY, ETC.)	ONE OR MORE 32-BIT WORDS	DESTINATION MAC (6 BYTES)	SOURCE MAC (6 BYTES)	PROTOCOL IDENTIFIER OR IEEE802.3 LENGTH FIELD (2 BYTES)	...NETWORK LAYER ADDRESSES...	..PAYLOAD..	CRC

FIG. 6

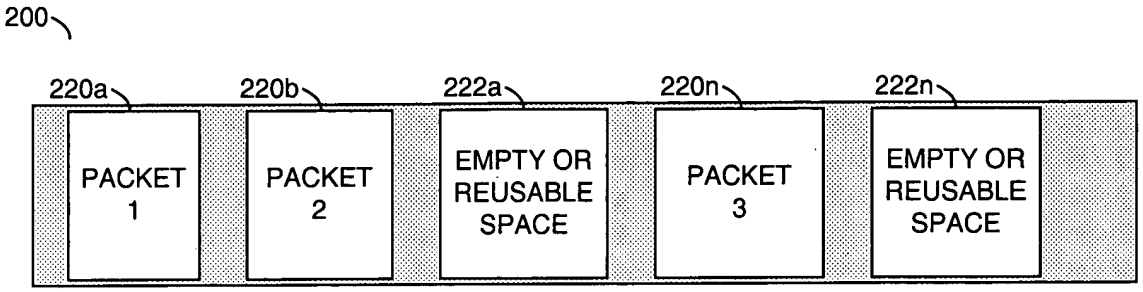


FIG. 7

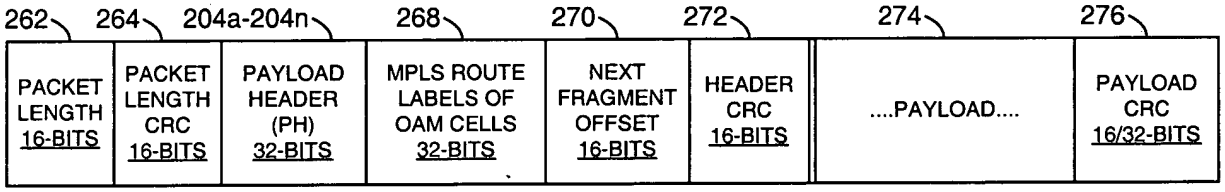


FIG. 8

204a

292	290	288		286	284		282		280	
UNUSED D31:D20	PADDING D18:D19	FRAGMENT ID D17:D16		HEADER LENGTH D15:D8	PACKET REUSE D7		HEADER DATA D6:D4		PACKET IDENTIFIER D3:D0	
RESERVED FOR FUTURE USE	00 : NO PAD 01 : 1-BYTE PAD 10 : 2-BYTE PAD 11 : 3-BYTE PAD	00 01 10 11	NO FRAG. INITIAL PKT CONT. PKT END PKT	LENGTH OF HEADER BYTES	0 1	NO YES	000 001 010 011- 111	NONE MPLS OAM (FUTURE USE)	0000 0001 0010 0011 0100 0101 0111 - 1111	NULL PACKET ATM CELLS PPP IP ETHERNET PDH (FUTURE USE)

FIG. 9

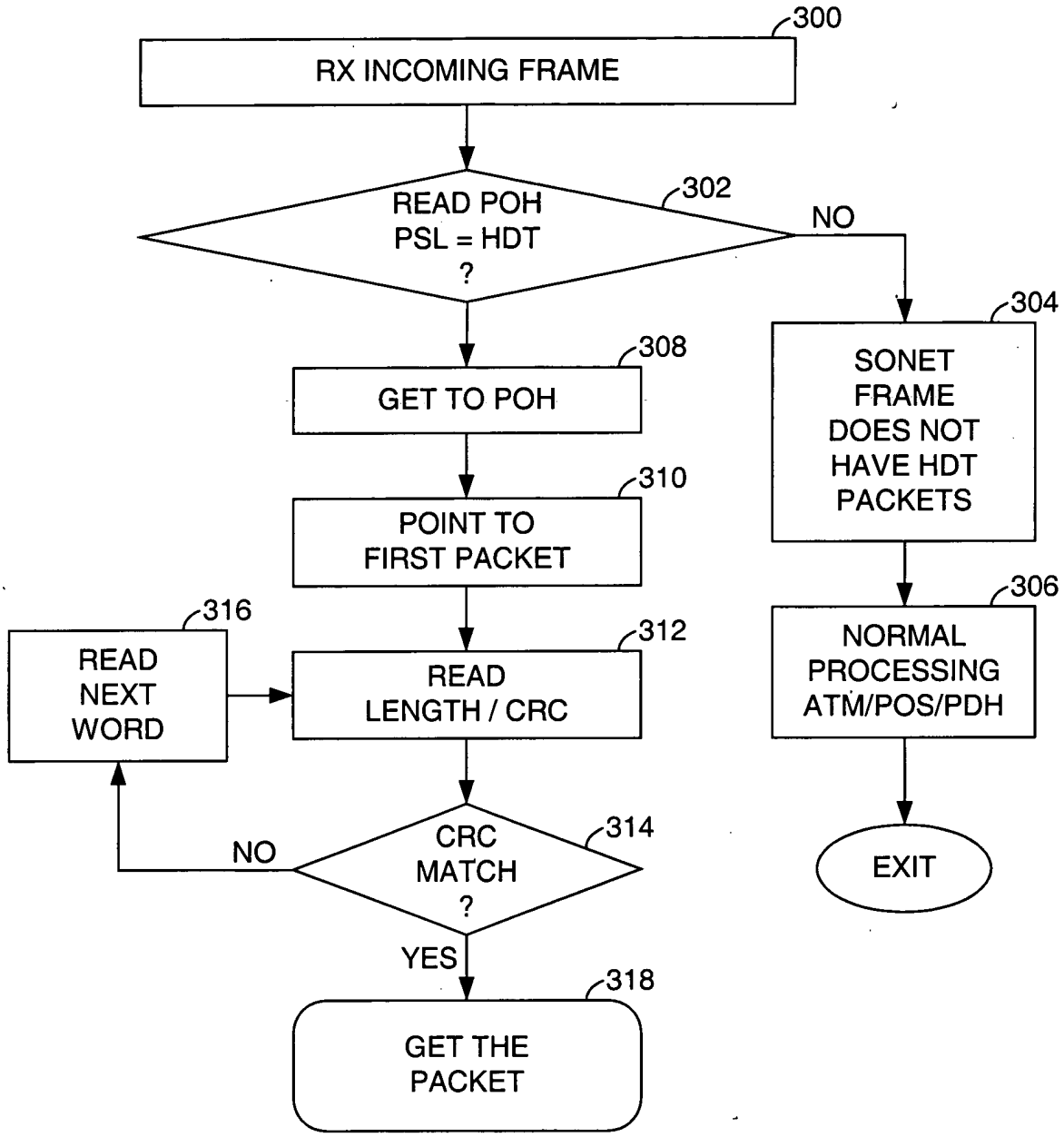

300
RX INCOMING FRAME
READ POH
PSL = HDT
?
302
NO
304
SONET
FRAME
DOES NOT
HAVE HDT
PACKETS
308
GET TO POH
310
POINT TO
FIRST PACKET
306
NORMAL
PROCESSING
ATM/POS/PDH
316
READ
NEXT
WORD
312
READ
LENGTH / CRC
CRC
MATCH
?
314
NO
EXIT
YES
318
GET THE
PACKET

FIG. 10

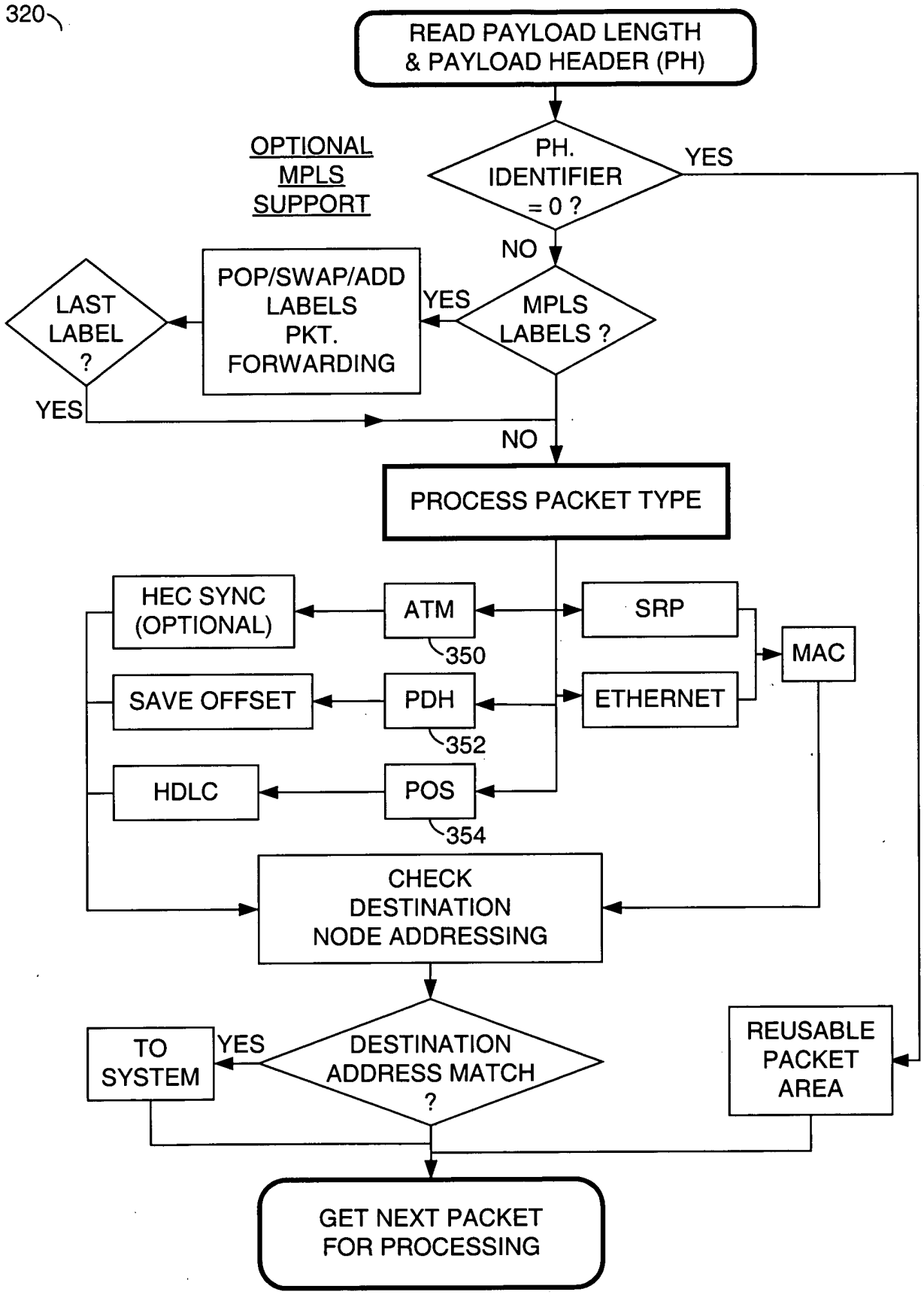

320
READ PAYLOAD LENGTH & PAYLOAD HEADER (PH)
OPTIONAL MPLS SUPPORT
PH. IDENTIFIER = 0 ?
YES
NO
MPLS LABELS ?
YES
POP/SWAP/ADD LABELS PKT. FORWARDING
LAST LABEL ?
YES
NO
PROCESS PACKET TYPE
HEC SYNC (OPTIONAL)
ATM
SRP
MAC
350
SAVE OFFSET
PDH
ETHERNET
352
HDLC
POS
354
CHECK DESTINATION NODE ADDRESSING
TO SYSTEM
YES
DESTINATION ADDRESS MATCH ?
REUSABLE PACKET AREA
GET NEXT PACKET FOR PROCESSING

FIG. 11

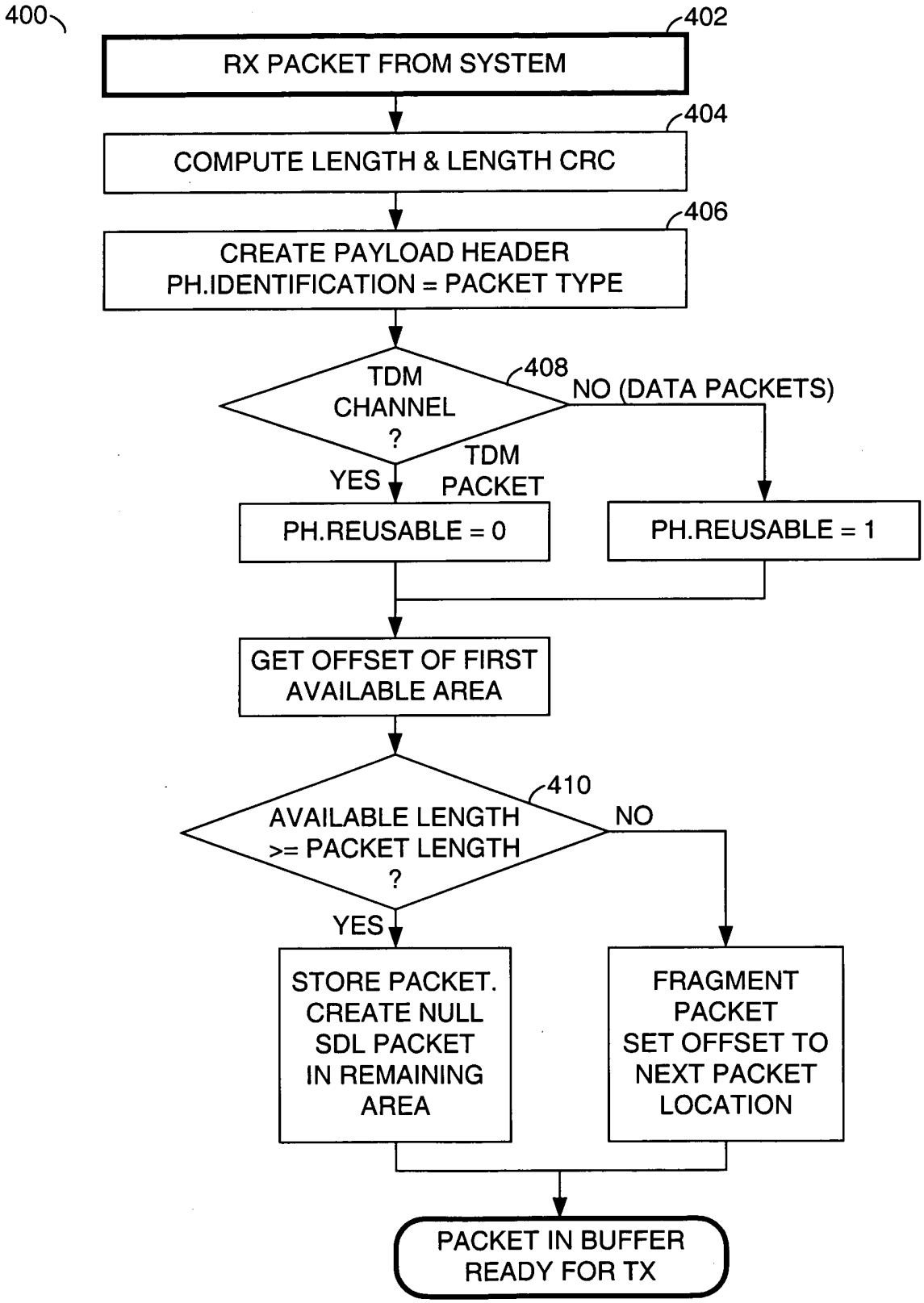

400
402
RX PACKET FROM SYSTEM
404
COMPUTE LENGTH & LENGTH CRC
406
CREATE PAYLOAD HEADER
PH.IDENTIFICATION = PACKET TYPE
408
TDM CHANNEL ?
NO (DATA PACKETS)
YES
TDM PACKET
PH.REUSABLE = 0
PH.REUSABLE = 1
GET OFFSET OF FIRST AVAILABLE AREA
410
AVAILABLE LENGTH >= PACKET LENGTH ?
NO
YES
STORE PACKET. CREATE NULL SDL PACKET IN REMAINING AREA
FRAGMENT PACKET SET OFFSET TO NEXT PACKET LOCATION
PACKET IN BUFFER READY FOR TX

FIG. 12

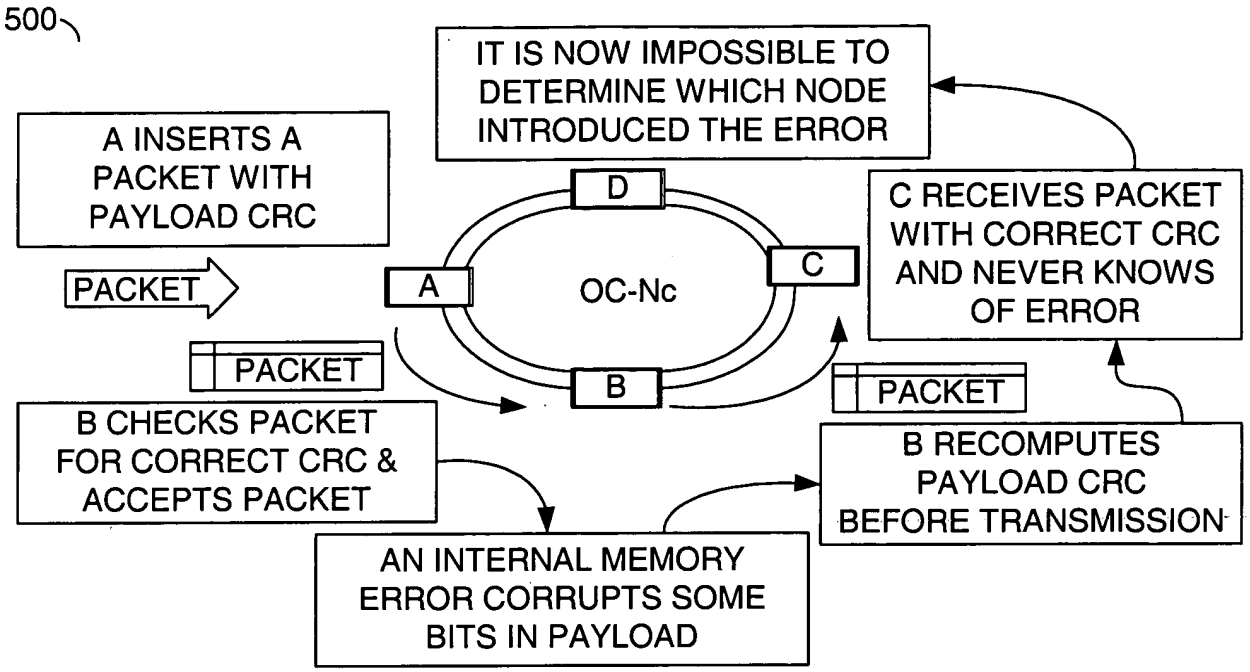

500
IT IS NOW IMPOSSIBLE TO DETERMINE WHICH NODE INTRODUCED THE ERROR
A INSERTS A PACKET WITH PAYLOAD CRC
C RECEIVES PACKET WITH CORRECT CRC AND NEVER KNOWS OF ERROR
D
A
OC-Nc
C
B
PACKET
PACKET
PACKET
B CHECKS PACKET FOR CORRECT CRC & ACCEPTS PACKET
B RECOMPUTES PAYLOAD CRC BEFORE TRANSMISSION
AN INTERNAL MEMORY ERROR CORRUPTS SOME BITS IN PAYLOAD

FIG. 13

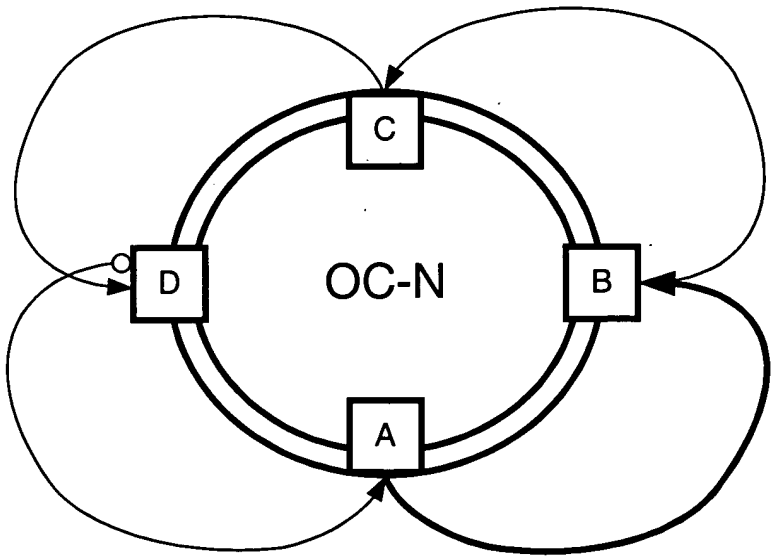

C
D
OC-N
B
A

FIG. 14